UNITED STATES PATENT AND TRADEMARK OFFICE

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/764,615	01/26/2004	Rajiv K. Bhateja	59935.us	8926

7590 10/07/2005	EXAMINER
LUEDEKA NEELY & GRAHAM P.C	CHERRY, STEPHEN J
P.BOX 1871 KNOXVILLE	

ART UNIT	PAPER NUMBER
2863	

DATE MAILED: 10/07/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

PTO-90C (Rev. 10/03)

	Application No.	Applicant(s)
Office Action Summary	10/764,615	BHATEJA ET AL.
	Examiner	Art Unit	
	Stephen J. Cherry	2863	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE <u>3</u> MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.
- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on <u>23 February 2005</u>.
2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.
3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-17* is/are pending in the application.
   4a) Of the above claim(s) _____ is/are withdrawn from consideration.
5)☐ Claim(s) _____ is/are allowed.
6)☒ Claim(s) *1-2, 4, 6, 8-16* is/are rejected.
7)☒ Claim(s) *3,5,7 and 17* is/are objected to.
8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.
10)☒ The drawing(s) filed on *26 January 2004* is/are: a)☒ accepted or b)☐ objected to by the Examiner.
   Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
   Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
   a)☐ All b)☐ Some * c)☐ None of:
   1.☐ Certified copies of the priority documents have been received.
   2.☐ Certified copies of the priority documents have been received in Application No. _____.
   3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
   * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date *1-26-2004*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____ .

DETAILED ACTION

Claim Objections

Claims 1-5 are objected to because of the following informalities:

1. Claim 1 recites, "said interface <u>device</u>". This feature, which lacks antecedent

basisin the claim, appears to be a reference to "an interface <u>circuit</u>".

Appropriate correction is required.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all

obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Claims 1-2, 4, 6, 8-16 are rejected under 35 U.S.C. 103(a) as being unpatentable

over U.S. Patent 5,248,248 to Adley in view of U.S. Patent 6,362,768 to Younis et al,

and in view of U.S. Patent 5,470,218 to Hillman et al.

Claim 1-2, 4, 6, 8-16 recite, as disclosed by Adley:

a plurality of sensor modules, each of said plurality of sensor module

accepting an input from a sensor selected from the group consisting of a

linear variable differential transformer (248, fig. 5 A-C, and col. 8, line 34),

a current loop, a dc voltage sensor, a differential voltage sensor, a

piezoelectric vibration sensor, and a power sensor ('248, fig. 5 C, 100); a

plurality of module slots each adapted to receive one of said plurality of

sensor modules ('248, col. 10, line 7, Allen Bradley PLC controller

inherently slots for I/O, as shown in U.S. Patent 4,510,565 to

Dummermuth, figure 1); a processing device performing a method of

monitoring a production process, said method comprising the steps of:

(a) identifying the sensor module installed in each of said plurality of

module slots ('248, col. 10, line 7, Allen Bradley PLC controller inherently

identifies modules on backplane bus, as shown in U.S. Patent 4,510,565

to Dummermuth, figure 3);

(c) acquiring a stream of data from the sensor module installed in

selected ones of said plurality of module slots ('248, fig. 6 indicates stream

of data and col. 13);

(d) processing the stream of data ('248, col. 10, line 13);

a storage device in communication with said processing device, said

storage device for storing said data for later recall ('248, fig. 1, memory of

197).

However, Adley does not explicitly disclose the details of an operator interface of

data conversion and calibration.

Claims 1-2, 4, 6, 8-16 further recite, as disclosed by Younis:

calibrating the sensor module installed in each of said plurality of module

slots ('768, fig. 3);

a signal conditioning circuit for conditioning said input ('768, 20);

an interface circuit converting analog signals into digital signals and digital

signals into analog signals ('768, fig. 1, 40 and 50);

a gain control circuit in communication responsive to said processing

device and in communication with said signal conditioning circuit in each

of said plurality of sensor modules, said gain control circuit amplifying the

stream of data from the sensor module installed in selected ones of said

plurality of module slots ('768, fig. 3 "gain");

an offset control circuit in communication responsive to said processing

device and in communication with said signal conditioning circuit in each

of said plurality of sensor modules, said offset control circuit applying a do

voltage offset to the stream of data from the sensor module installed in

selected ones of said plurality of module slots ('768, fig. 3 "calibration");

a latch control circuit in communication responsive to said processing

device and in communication with said signal conditioning circuit in each

of said plurality of sensor modules, said latch control circuit holding values

of the stream of data from the sensor module installed in selected ones of

said plurality of module slots ('768, col. 8, line 37);

Claims 1-2, 4, 6, 8-16 further recite, as disclosed by Hillman:

(e) generating a visual presentation for the stream of data ('218, fig. 1, 71);

a display device in communication with said processing device, said

display device displaying said visual presentation in a human readable

format ('218, fig. 1, 70);

an input device in communication with said processing device, said input

device accepting commands from a user thereby allowing the user to

control said processing device ('218, fig. 1, 72)

a machine interface in communication with the processing device and a

control circuit of the production machine having control over various

process parameters, wherein said processing device accepts commands

from said input device and generates control signals transmitted through

said machine interface thereby allowing a user to adjust the various

process parameters of the production machine ('218, fig. 5)

a first calibration range associated with the sensor and a second

calibration range associated with said sensor, said first calibration range

being wider than said second calibration value, said first calibration value

being used for data acquisition and said second calibration value being

used for data display ('218, fig 4 indicates analog temperature values

scaled in engineering units, rather than the raw values from the a/d

converter)

Thus, it would have been obvious to one of ordinary skill in the art at the time the

invention was made to combine the operator interface of Hillman and the signal

conditioning of Younis with the invention of Adly to allow the operator a clear

understanding of machine performance ('218, col. 2, line 16) and to allow the use of

various signals with the same hardware ('768, col. 1, line 38).

Allowable Subject Matter

Claims 3, 5, 7, and 17 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

The following is a statement of reasons for the indication of allowable subject matter:

Claims 3 and 7 recites "a switching circuit in communication with said plurality of modules slots, said switching circuit adapted to split the input from one of said plurality of sensor modules into a first signal and a second signal, said switching circuit passing said second signal to another of said plurality of sensor modules, wherein said first signal and second signal are processed independently". This feature in combination with the remaining claimed structure avoids the prior art of record.

Claim 5 and 17 recite, "

(f) accepting scale information for the linear variable differential transformer input;

(g) setting a gain to an initial value;

(h) setting an offset to an initial value;

(i) recording a minimum voltage produced as a complete range of movement of the linear variable differential transformer is traversed;

(j) recording a maximum voltage produced as the complete range of movement of the linear variable differential transformer is traversed;

(k) identifying a linear region of operation of the linear variable differential

transformer;

(1) adjusting said offset while the linear variable differential transformer is

operating within the linear region; and

(m) adjusting said gain while the linear variable differential transformer is

operating at a maximum desirable position within the complete range of

movement".

This feature in combination with the remaining claimed structure avoids the prior art of

record.

Conclusion

The prior art made of record and not relied upon is considered pertinent to

applicant's disclosure. U.S. Patent 4,510,565 to Dummermuth shows the use of slots in

a Programmable Controller.

Any inquiry concerning this communication or earlier communications from the

examiner should be directed to Stephen J. Cherry whose telephone number is (571)

272-2272. The examiner can normally be reached on M-F 8:00-4:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's

supervisor, John Barlow can be reached on (571) 272-2269. The fax phone number for

the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

SJC

MICHAEL NGHIEM
PRIMARY EXAMINER